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## LUMBAR SPINE

### New test of spondi

[BMC Musculoskelet Disord](#). 2015 Apr 22;16(1):97. doi: 10.1186/s12891-015-0551-0.

New physical examination tests for lumbar spondylolisthesis and instability: low midline sill sign and interspinous gap change during lumbar flexion-extension motion.

[Ahn K<sup>1</sup>](#), [Jhun HJ<sup>2</sup>](#).

[Author information](#)

[Abstract](#)

#### **BACKGROUND:**

Lumbar spondylolisthesis (LS) and lumbar instability (LI) are common disorders in patients with low back or lumbar radicular pain. However, few physical examination tests for LS and LI have been reported. In the study described herein, new physical examination tests for LS and LI were devised and evaluated for their validity. The test for LS was designated "low midline sill sign", and that for LI was designated "interspinous gap change" during lumbar flexion-extension motion.

#### **METHODS:**

The validity of the low midline sill sign was evaluated in 96 patients with low back or lumbar radicular pain. Validity of the interspinous gap change during lumbar flexion-extension motion was evaluated in 73 patients with low back or lumbar radicular pain. The sensitivity, specificity, and positive and negative predictive values of the two tests were also investigated.

#### **RESULTS:**

The sensitivity and specificity of the low midline sill sign for LS were 81.3% and 89.1%, respectively. Positive and negative predictive values of the test were 78.8% and 90.5%, respectively. The sensitivity and specificity of the interspinous gap change test for LI were 82.2% and 60.7%, respectively. Positive and negative predictive values of the test were 77.1% and 68.0%, respectively.

#### **CONCLUSIONS:**

The low midline sill sign and interspinous gap change tests are effective for the detection of LS and LI, and can be performed easily in an outpatient setting.

PMID:

25896607

## LBP

### Modic changes

[BMC Musculoskelet Disord](#). 2015 Apr 22;16:98. doi: 10.1186/s12891-015-0540-3.

Association between changes in lumbar Modic changes and low back symptoms over a two-year period.

[Järvinen J<sup>1</sup>](#), [Karppinen J<sup>2,3,4</sup>](#), [Niinimäki J<sup>5,6</sup>](#), [Haapea M<sup>7</sup>](#), [Grönblad M<sup>8</sup>](#), [Luoma K<sup>9</sup>](#), [Rinne E<sup>10</sup>](#).

[Author information](#)[Abstract](#)**BACKGROUND:**

The association of Modic changes (MC) with low back pain (LBP) is unclear. The purpose of our study was to investigate the associations between the extent of Type 1 (M1) and Type 2 (M2) MC and low back symptoms over a two-year period.

**METHODS:**

The subjects (n = 64, mean age 43.8 y; 55 [86%] women) were consecutive chronic LBP patients who had M1 or mixed M1/M2 on lumbar spine magnetic resonance imaging (MRI). Size and type of MC on sagittal lumbar MRI and clinical data regarding low back symptoms were recorded at baseline and two-year follow-up. The size (%) of each MC in relation to vertebral size was estimated from sagittal slices (midsagittal and left and right quarter), while proportions of M1 and M2 within the MC were evaluated from three separate slices covering the MC. The extent (%) of M1 and M2 was calculated as a product of the size of MC and the proportions of M1 and M2 within the MC, respectively. Changes in the extent of M1 and M2 were analysed for associations with changes in LBP intensity and the Oswestry disability index (ODI), using linear regression analysis.

**RESULTS:**

At baseline, the mean LBP intensity was 6.5 and the mean ODI was 33%. During follow-up, LBP intensity increased in 15 patients and decreased in 41, while ODI increased in 19 patients and decreased in 44. In univariate analyses, change in the extent of M1 associated significantly positively with changes in LBP intensity and ODI (beta 0.26, p = 0.036 and beta 0.30, p = 0.017; respectively), whereas the change in the extent of M2 did not associate with changes in LBP intensity and ODI (beta -0.24, p = 0.054 and beta -0.13, p = 0.306; respectively). After adjustment for age, gender, and size of MC at baseline, change in the extent of M1 remained significantly positively associated with change in ODI (beta 0.53, p = 0.003).

**CONCLUSION:**

Change in the extent of M1 associated positively with changes in low back symptoms.

PMID:

25897658

**LBP and leg length**

[BMC Musculoskelet Disord](#). 2015 May 7;16:110. doi: 10.1186/s12891-015-0571-9.

Leg-length discrepancy is associated with low back pain among those who must stand while working.

[Rannisto S](#)<sup>1,2,3</sup>, [Okuloff A](#)<sup>4,5</sup>, [Uitti J](#)<sup>6,7,8</sup>, [Paananen M](#)<sup>9,10</sup>, [Rannisto PH](#)<sup>11</sup>, [Malmivaara A](#)<sup>12</sup>, [Karppinen J](#)<sup>13,14,15</sup>.

[Author information](#)[Abstract](#)**BACKGROUND:**

Some studies suggest that leg length discrepancy (LLD) is associated with low back pain (LBP) but many have not found such an association leading to conflicting evidence on the role of LLD in LBP.

**METHODS:**

The study population consisted of meat cutters with a standing job and customer service workers with a sedentary job from Atria Suomi Ltd (Nurmo, Finland) who were at least 35 years old and had been working in their jobs for at least 10 years. Leg length of each participant was measured

with a laser range meter fixed in a rod, which was holding the scanning head of the ultrasound apparatus. Association of the intensity of LBP (10-cm Visual Analog Scale) with LLD was analysed by linear regression model, while the hurdle model was used in analysing the association of number of days with LBP and days on sick leave during the past year. Associations were adjusted by gender, age, BMI, smoking, depressive feelings and type of work (standing or sedentary job).

**RESULTS:**

The final study population consisted of 114 meat cutters (26 females and 88 males) and 34 customer service workers (30 females and four males). Forty-nine percent of the meat cutters and 44% of the customer service workers had LLD of at least 6 mm, while 16% and 15%, respectively, had LLD of at least 11 mm. In the whole study population, LLD of 6 mm or more was associated with higher intensity of LBP and number of days with LBP. In the stratified analysis, both intensity of LBP and number of days of LBP were associated with LLD among meat cutters but not among customer service workers. The sick leaves during past year were slightly longer among those with LLD 10 mm or more, but the differences were not statistically significant.

**CONCLUSIONS:**

LLD, measured with a laser range meter, was associated with intensity of LBP and self-reported days with LBP during the past year among meat cutters engaged in standing work.

**TRIAL REGISTRATION:**

ISRCTN11898558 - The role of leg length discrepancy in low back pain.

PMID:

25943907

## DISC

### Impact of inactivity

[Arthritis Res Ther.](#) 2015 May 7;17(1):114. doi: 10.1186/s13075-015-0629-y.

Physical inactivity is associated with narrower lumbar intervertebral discs, high fat content of paraspinal muscles and low back pain and disability.

[Teichtahl AJ](#)<sup>1,2</sup>, [Urquhart DM](#)<sup>3</sup>, [Wang Y](#)<sup>4</sup>, [Wluka AE](#)<sup>5</sup>, [O'Sullivan R](#)<sup>6,7</sup>, [Jones G](#)<sup>8</sup>, [Cicutini FM](#)<sup>9</sup>.

[Author information](#)

[Abstract](#)

**INTRODUCTION:**

Although physical inactivity has been associated with numerous chronic musculoskeletal complaints, few studies have examined its associations with spinal structures. Moreover, previously reported associations between physical activity and low back pain are conflicting. This study examined the associations between physical inactivity and intervertebral disc height, paraspinal fat content and low back pain and disability.

**METHODS:**

Seventy-two community-based volunteers not selected for low back pain underwent magnetic resonance imaging (MRI) of their lumbosacral spine (L1 to S1) between 2011 and 2012. Physical activity was assessed between 2005 and 2008 by questionnaire, while low back pain and disability were assessed by the Chronic Pain Grade Scale at the time of MRI. Intervertebral disc height and cross-sectional area and fat content of multifidus and erector spinae were assessed from MRI.

### **RESULTS:**

Lower physical activity levels were associated with a more narrow average intervertebral disc height ( $\beta$  -0.63 mm, 95% confidence interval (CI) -1.17 mm to -0.08 mm,  $P = 0.026$ ) after adjusting for age, gender and body mass index (BMI). There were no significant associations between physical activity levels and the cross-sectional area of multifidus or erector spinae. Lower levels of physical activity were associated with an increased risk of high fat content in multifidus (odds ratio (OR) 2.7, 95% CI 1.1 to 6.7,  $P = 0.04$ ) and high-intensity pain/disability (OR = 5.0, 95% CI 1.5 to 16.4,  $P = 0.008$ ) after adjustment for age, gender and BMI.

### **CONCLUSIONS:**

Physical inactivity is associated with narrower intervertebral discs, high fat content of the multifidus and high-intensity low back pain and disability in a dose-dependent manner among community-based adults. Longitudinal studies will help to determine the cause and effect nature of these associations.

PMID:

2594790

## INJECTIONS

## SURGERY

### Discectomy

[Int Orthop](#). 2015 Apr 12. [Epub ahead of print]

Evaluation of transforaminal endoscopic lumbar discectomy in the treatment of lumbar disc herniation.

[Wang K<sup>1</sup>](#), [Hong X](#), [Zhou BY](#), [Bao JP](#), [Xie XH](#), [Wang E](#), [Wu XT](#).

[Author information](#)

### Abstract

#### **PURPOSE:**

The purpose of this study was to evaluate the efficacy of transforaminal endoscopic lumbar discectomy (TELD) in the treatment of lumbar disc herniation (LDH) and to identify the relationship between TELD efficacy and age.

#### **METHODS:**

A total of 207 consecutive LDH patients who had undergone TELD with the THESSYS system from January 2013 to September 2014 were divided into two groups on the basis of their age, with 108 cases in the  $\leq 45$ -year-old age group and 99 cases in the  $> 45$ -year-old group. The Oswestry Disability Index (ODI) was used to quantify the pain relief. The degree of pain and disability were measured on the basis of the visual analog scale (VAS) and the modified MacNab criteria. Complications, duration of hospital stay, surgical costs, and operation time were recorded and compared between the two groups. Spearman's coefficient of rank correlation was used to assess the learning curves for TELD.

#### **RESULTS:**

The mean pre-operative and postoperative VAS and ODI scores significantly improved in both age  $\leq 45$  group and age  $> 45$  group, with no significant differences between them. In age  $\leq 45$  group, 56 % had excellent outcomes, 28 % good, 14 % fair, and 3 % poor. In the age  $> 45$  group, 51 % had excellent outcomes, 20 % good, 25 % fair, and 4 % poor. The average lengths of hospital stay for the age  $\leq 45$  group and age  $> 45$  group were 6.8 and 8.4 days, respectively. The mean time to return to work or normal activities was ten days for the age  $\leq 45$  group and 15 days

for the age >45 group. The mean operative time for the age ≤45 group was 94 minutes and that for age >45 group was 97 minutes. The surgical cost of age ≤45 group was 15,480 RMB, which was lower than the 16,381 RMB of age >45 group. A total of 14 patients in the age ≤45 group and 13 patients in age >45 group used analgesic medications. Three and five recurrences were reported in the age ≤45 group and age >45, respectively. The steep learning curves of operative time plotted against the number of surgeries conducted suggest that the TELD technique can be mastered quickly in terms of reducing the duration of operation.

**CONCLUSIONS:**

The efficacy of TELD is relatively good for the selected young and elderly patients in this study. Therefore, age is not a predictor of TELD surgery-related outcomes.

PMID:

25864088

## PELVIC GIRDLE

## PELVIC ORGANS

### First time pregnancy

[Phys Ther.](#) 2015 Apr 30. [Epub ahead of print]

### The Experiences of First-Time Mothers With Persistent Pelvic Girdle Pain After Childbirth: A Descriptive Qualitative Study.

[Wuytack F](#)<sup>1</sup>, [Curtis E](#)<sup>2</sup>, [Begley C](#)<sup>3</sup>.

[Author information](#)

#### Abstract

**BACKGROUND:**

Pelvic Girdle Pain (PGP) is common during pregnancy and negatively affects women's lives. When PGP persists after a birth, the way it impacts on women's lives may change, particularly for first-time mothers as they adjust to motherhood, yet the experiences of women with persistent PGP remain largely unexplored.

**OBJECTIVES:**

The objective of this study was to explore primiparous women's experiences of persistent PGP and its impact on their lives postpartum, including caring for their infant and their parental role.

**DESIGN:**

A descriptive qualitative study.

**METHODS:**

Following institution ethical approval, 23 consenting primiparous women with PGP that had started during pregnancy and persisted for at least 3 months postpartum participated in individual interviews. These were recorded, transcribed, and analysed using thematic analysis.

**RESULTS:**

Four themes emerged: (1) 'Putting up with it: coping with everyday life'; women put up with the pain but had to balance activities and were grateful for support from family and friends to face everyday challenges, (2) 'I don't feel back to normal'; feelings of physical limitations, frustration and a negative impact on their mood were described, (3) 'Unexpected'; persistent symptoms were unexpected for women due to a lack of information given about PGP, (4) 'What next?'; the future

of their symptoms was met with great uncertainty and women expressed worry about having another baby.

**CONCLUSION:**

For first-time mothers, having persistent PGP postpartum impacts their daily lives in many ways. These findings provide important information for healthcare providers, which will improve their understanding of these women's experiences, enhance rapport, and can be used to provide information and address concerns, to optimise maternity care during pregnancy and beyond.

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PMID:

25929535

### Pregnancy related LBP

## Disturbed body perception, reduced sleep, and kinesiophobia in subjects with pregnancy-related persistent lumbopelvic pain and moderate levels of disability: An exploratory study

Manual Therapy , 05/05/2015

**B**eales D, et al. – The aim of this study is to compare women experiencing no pain post-pregnancy with those experiencing pregnancy-related persistent lumbopelvic pain across multiple biopsychosocial domains. Disturbances in body-perception, sleep and elevated kinesiophobia were found in pregnancy-related lumbopelvic pain subjects with moderate disability, factors previously linked to persistent low back pain. The cross-sectional nature of this study does not allow for identification of directional pathways between factors. The results support the consideration of these factors in the assessment and management of pregnancy-related lumbopelvic pain.

### Methods

- Participants completed questionnaires for thorough profiling of factors thought to be important in pregnancy-related lumbopelvic pain.
- Specific measures were the Urinary Distress Inventory, Medical Outcomes Study Sleep Scale, Back Beliefs Questionnaire, Tampa Scale for Kinesiophobia, Depression Anxiety Stress Scale, Coping Strategies Questionnaire, Pain Catastrophising Scale, The Fremantle Back Awareness Questionnaire and the Mindful Attention Awareness Scale.

- 
- Women were categorised into three groups; pain free (n=26), mild disability (n=12) and moderate disability (n=12) (based on Oswestry Disability Index scores).
- Non-parametric group comparisons were used to compare groups across the profiling variables.

## Results

- Differences were identified for kinesiophobia (p=0.03), body perception (p=0.02), sleep quantity (p<0.01) and sleep adequacy (p=0.02).
- Generally subjects in the moderate disability group had more negative findings for these variables.

## VISCERA

### IBD and mind body

[PLoS One](#). 2015 Apr 30;10(4):e0123861. doi: 10.1371/journal.pone.0123861. eCollection 2015.

Genomic and clinical effects associated with a relaxation response mind-body intervention in patients with irritable bowel syndrome and inflammatory bowel disease.

[Kuo B](#)<sup>1</sup>, [Bhasin M](#)<sup>2</sup>, [Jacquart J](#)<sup>3</sup>, [Scult MA](#)<sup>3</sup>, [Slipp L](#)<sup>3</sup>, [Riklin EI](#)<sup>3</sup>, [Lepoutre V](#)<sup>4</sup>, [Comosa N](#)<sup>1</sup>, [Norton BA](#)<sup>1</sup>, [Dassatti A](#)<sup>1</sup>, [Rosenblum J](#)<sup>1</sup>, [Thurler AH](#)<sup>1</sup>, [Surjanhata BC](#)<sup>1</sup>, [Hasheminejad NN](#)<sup>3</sup>, [Kagan L](#)<sup>3</sup>, [Slawsby E](#)<sup>3</sup>, [Rao SR](#)<sup>5</sup>, [Macklin EA](#)<sup>6</sup>, [Fricchione GL](#)<sup>7</sup>, [Benson H](#)<sup>8</sup>, [Liebermann TA](#)<sup>2</sup>, [Korzenik J](#)<sup>9</sup>, [Denninger JW](#)<sup>7</sup>.

[Author information](#)

**Abstract**

#### **INTRODUCTION:**

Irritable Bowel Syndrome (IBS) and Inflammatory Bowel Disease (IBD) can profoundly affect quality of life and are influenced by stress and resiliency. The impact of mind-body interventions (MBIs) on IBS and IBD patients has not previously been examined.

#### **METHODS:**

Nineteen IBS and 29 IBD patients were enrolled in a 9-week relaxation response based mind-body group intervention (RR-MBI), focusing on elicitation of the RR and cognitive skill building. Symptom questionnaires and inflammatory markers were assessed pre- and post-intervention, and at short-term follow-up. Peripheral blood transcriptome analysis was performed to identify genomic correlates of the RR-MBI.

#### **RESULTS:**

Pain Catastrophizing Scale scores improved significantly post-intervention for IBD and at short-term follow-up for IBS and IBD. Trait Anxiety scores, IBS Quality of Life, IBS Symptom Severity Index, and IBD Questionnaire scores improved significantly post-intervention and at short-term follow-up for IBS and IBD, respectively. RR-MBI altered expression of more genes in IBD (1059 genes) than in IBS (119 genes). In IBD, reduced expression of RR-MBI response genes was most significantly linked to inflammatory response, cell growth, proliferation, and oxidative stress-related pathways. In IBS, cell cycle regulation and DNA damage related gene sets were significantly upregulated after RR-MBI. Interactive network analysis of RR-affected pathways identified TNF, AKT and NF-κB as top focus molecules in IBS, while in IBD kinases (e.g. MAPK, P38 MAPK), inflammation (e.g. VEGF-C, NF-κB) and cell cycle and proliferation (e.g. UBC, APP) related genes emerged as top focus molecules.



**CONCLUSIONS:**

In this uncontrolled pilot study, participation in an RR-MBI was associated with improvements in disease-specific measures, trait anxiety, and pain catastrophizing in IBS and IBD patients. Moreover, observed gene expression changes suggest that NF- $\kappa$ B is a target focus molecule in both IBS and IBD-and that its regulation may contribute to counteracting the harmful effects of stress in both diseases. Larger, controlled studies are needed to confirm this preliminary finding.

**TRIAL REGISTRATION:**

ClinicalTrials.Gov NCT02136745.

PMID:

25927528

**IBD and pregnancy**

[J Fam Plann Reprod Health Care](#). 2015 Apr 22. pii: jfprhc-2014-101000. doi: 10.1136/jfprhc-2014-101000. [Epub ahead of print]

Disease-related pregnancy concerns and reproductive planning in women with inflammatory bowel diseases.

[Gawron LM](#)<sup>1</sup>, [Goldberger AR](#)<sup>2</sup>, [Gawron AJ](#)<sup>3</sup>, [Hammond C](#)<sup>4</sup>, [Keefer L](#)<sup>5</sup>.

[Author information](#)

**Abstract**

**BACKGROUND:**

Women with inflammatory bowel diseases (IBD) endorse disease-related pregnancy concerns that influence parity. Improvements in IBD management have potentially altered reproductive planning. Additionally, the proportion of American women who choose not to have children is increasing.

**AIM:**

To explore the effect of disease-related pregnancy concerns on parity and reproductive planning in a subset of women with IBD.

**DESIGN AND SETTING:**

Cross-sectional qualitative phone survey in an academic gastroenterology practice.

**METHODS:**

Questions included demographics, medical and reproductive history, future pregnancy plans, and if IBD affected pregnancy decision-making. Qualitative data were coded and frequencies and proportions calculated.

**RESULTS:**

The 129 female participants (31% response rate) were predominately white (85%), had at least some college education (97%) and a mean age of 34.3 years [standard deviation 6.2]. Some 60% had Crohn's disease and 30% had undergone IBD-related surgery. Half were nulliparae, 53% reported IBD-related pregnancy concerns and 57% desired future pregnancy. Women who desired a future pregnancy and had IBD-related concerns had higher parity than those without concerns ( $p=0.02$ ). Women desiring a future pregnancy and those with Crohn's disease had increased IBD-related concerns. Only four (3.1%) women identified IBD-related concerns that led to a smaller family size than desired.

**CONCLUSIONS:**

IBD-related concerns appear to be less likely to affect a woman's planned family size than previously reported. Concern about adverse pregnancy outcomes is more common in women

with Crohn's disease and those desiring future pregnancy, suggesting a need for targeted counselling to moderate risk perception.

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**KEYWORDS:**

counselling; education and training; general practice; health education; pregnancy planning

PMID:

25902816

## THORACIC SPINE

## CERVICAL SPINE

### Stenosis

[Eur Spine J.](#) 2015 Apr 23. [Epub ahead of print]

Cervical canal stenosis and adjacent segment degeneration after anterior cervical arthrodesis.

[Zhang JT](#)<sup>1</sup>, [Cao JM](#), [Meng FT](#), [Shen Y](#).

[Author information](#)

#### Abstract

**PURPOSE:**

Adjacent segment degeneration (ASD) is known to occur after anterior cervical arthrodesis. However, it is not known whether cervical canal stenosis enhances the risk of ASD. The purpose of this study was to explore whether congenital stenosis could be used as a predictor of ASD after anterior cervical decompression and fusion (ACDF).

**METHODS:**

We enrolled 141 patients who had undergone ACDF for cervical myelopathy and/or radiculopathy, and had at least 6 years of follow-up. In standard radiographs of cervical spine in lateral view, bony congenital stenosis was evaluated and all patients were divided into two groups: stenosis (n = 63) and non-stenosis (n = 78). Radiographic ASD was assessed according to the criteria of Kellgren and Lawrence and correlated with symptomatic ASD. Clinical and radiological parameters were compared between the groups. The primary outcome was the rate of radiographic ASD after initial ACDF. The incidence of symptomatic ASD was assessed by Kaplan-Meier method.

**RESULTS:**

Radiographic ASD and symptomatic ASD developed in 46.8 % and 18.4 % of all patients, respectively. There was a significant association between congenital stenosis and radiographic ASD. The area under the receiver operating characteristic curve of preoperative anteroposterior (AP) diameter of cervical canal for predicting radiographic ASD was 0.756. 13.0 mm was the cutoff value of preoperative AP diameter of cervical canal predicting radiographic ASD. Kaplan-Meier analysis predicted a disease-free survival rate of symptomatic ASD in 97.2 % of patients at 5 years and 78.0 % at 10 years after ACDF. There was no significant difference in survival rates of the adjacent segment between the two groups via log-rank analysis (P = 0.102).

**CONCLUSION:**

Congenital stenosis can increase the rate of radiographic ASD after initial ACDF. The cutoff value of 13.0 mm for preoperative AP diameter of cervical canal had the highest validity for predicting radiographic ASD.

PMID:

25904424

**Joint position sense in C spine pain****Joint position sense error in people with neck pain: A systematic review**

Manual Therapy , 05/05/2015

**D**e Vries J, et al.

**Abstract****Background**

Several studies in recent decades have examined the relationship between proprioceptive deficits and neck pain. However, there is no uniform conclusion on the relationship between the two. Clinically, proprioception is evaluated using the Joint Position Sense Error (JPSE), which reflects a person's ability to accurately return his head to a predefined target after a cervical movement.

**Objectives**

We focused to differentiate between JPSE in people with neck pain compared to healthy controls.

**Study design**

Systematic review according to the PRISMA guidelines.

**Method**

Our data sources were Embase, Medline OvidSP, Web of Science, Cochrane Central, CINAHL and Pubmed Publisher. To be included, studies had to compare JPSE of the neck (O) in people with neck pain (P) with JPSE of the neck in healthy controls (C).

**Results/findings**

Fourteen studies were included. Four studies reported that participants with traumatic neck pain had a significantly higher JPSE than healthy controls. Of the eight studies involving people with non-traumatic neck pain, four reported significant differences between the groups. The JPSE did not vary between neck-pain groups.

**Conclusions**

Current literature shows the JPSE to be a relevant measure when it is used correctly. All studies which calculated the JPSE over at least six trials showed a significantly increased JPSE in the neck pain group. This strongly suggests that 'number of repetitions' is a major element in correctly performing the JPSE test.

**UPPER C SPINE**

**WHIPLASH**

**CRANIUM/TMJ**

**HEADACHES**

**VESTIBULAR**

**CONCUSSIONS**

**SHOULDER GIRDLE**

**CLAVICLE**

**GLENOHUMERAL/SHOULDER**

**ROTATOR CUFF**

**ADHESIVE CAPSULITIS**

**IMPINGMENT**

**SURGERY**

**ELBOW**

**WRIST AND HAND**

**Phone use**

Muscle Nerve. 2015 Apr 25. doi: 10.1002/mus.24695. [Epub ahead of print]

Effects of smartphone overuse on hand function, pinch strength, and the median nerve.

Erkol İnal E<sup>1</sup>, Demirci K, Çetintürk A, Akgönül M, Savaş S.

### [Author information](#)

#### Abstract

##### **INTRODUCTION:**

We investigated the flexor pollicis longus (FPL) tendon and median nerve in smartphone users by ultrasonography to assess the effects of smartphone addiction on the clinical and functional status of the hands.

##### **METHODS:**

One-hundred-two students were divided into 3 groups: Non-users, high and low smartphone-users. Smartphone Addiction Scale (SAS) scores and grip and pinch strengths were recorded. Pain in thumb movement and rest and hand function were evaluated on a visual analog scale (VAS) and the Duruöz Hand Index (DHI) respectively. The cross sectional areas (CSA) of the median nerve and the FPL tendon were calculated bilaterally with ultrasonography.

##### **RESULTS:**

There were significantly higher median nerve CSAs in the dominant hands of the high smartphone users than non-dominant hands ( $P < 0.001$ ). The SAS scores correlated with the VAS pain for movement and rest, the DHI scores, and pinch strength ( $P < 0.05$ ,  $r = 0.345$ ,  $0.272$ ,  $0.245$ , and  $0.281$  respectively).

##### **DISCUSSION:**

Smartphone overuse enlarges the median nerve, causes pain in the thumb, and decreases pinch strength and hand functions. This article is protected by copyright. All rights reserved.

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##### **KEYWORDS:**

Flexor pollicis longus; median nerve; repetitive wrist movement; smartphone addiction; ultrasonography

PMID:

25914119

## CARPAL TUNNEL SYNDROME

## HIP

## REPLACEMENTS

## OA

## IMPINGEMENT

### Football practice and develop of cam

[Br J Sports Med](#). 2015 May;49(9):630-4. doi: 10.1136/bjsports-2014-094130. Epub 2015 Jan 7.

The relationship between the frequency of football practice during skeletal growth and the presence of a cam deformity in adult elite football players.

[Tak J](#)<sup>1</sup>, [Weir A](#)<sup>2</sup>, [Langhout R](#)<sup>3</sup>, [Waarsing JH](#)<sup>4</sup>, [Stubbe J](#)<sup>5</sup>, [Kerkhoffs G](#)<sup>6</sup>, [Agricola R](#)<sup>4</sup>.

Author information**Abstract****BACKGROUND/AIM:**

Cam deformity (CD) is likely a bony adaptation in response to high-impact sports practice during skeletal growth. We ascertained whether a dose-response relationship exists between the frequency of football practice during skeletal growth and the presence of a CD in adulthood, and if the age at which a football player starts playing football is associated with the presence of a CD in adulthood.

**METHODS:**

Prevalence of a CD ( $\alpha$  angle  $>60^\circ$ ) and a pathological CD ( $\alpha$  angle  $>78^\circ$ ) was studied using standardised anteroposterior (AP) and frog-leg lateral (FLL) radiographs that were obtained during seasonal screening. The age of starting to play football with a low frequency (LF;  $\leq 3$  times/week) and high frequency (HF;  $\geq 4$  times/week) was retrospectively assessed. The differences in prevalence of a CD per hip, in either view, between groups were calculated by logistic regression with generalised estimating equations.

**RESULTS:**

63 players (mean( $\pm$ SD) age 23.1( $\pm$ 4.2) years) participated, yielding 126 hips for analysis. The prevalence of a CD in the FLL was 40% (n=82) in players who started playing HF football from the age of 12 years or above, and 64% (n=44) in those playing HF football before the age of 12 years (p=0.042). This was also true for a pathological CD (12% vs 30%, p=0.038). The AP views revealed no difference.

**CONCLUSIONS:**

Our results indicate a probable dose-response relationship between the frequency of football practice during skeletal growth and the development of a CD, which should be confirmed in future prospective studies.

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**KEYWORDS:**

Bone; Growth; Hip; Radiology; Risk factor

PMID:

25568331

**Hockey goalies**

Am J Sports Med. 2015 Apr 15. pii: 0363546515578251. [Epub ahead of print]

**Femoroacetabular Impingement in Elite Ice Hockey Goaltenders: Etiological Implications of On-Ice Hip Mechanics.**

Whiteside D1, Deneweth JM2, Bedi A3, Zernicke RF4, Goulet GC2.

**Author information****Abstract****BACKGROUND:**

Femoroacetabular impingement (FAI) is particularly prevalent in ice hockey. The butterfly goalie technique is thought to involve extreme ranges of hip motion that may predispose goaltenders to FAI.

**PURPOSE:**

## ABSTRACTS

To quantify hip mechanics during 3 common goaltender movements and interpret their relevance to the development of FAI.

**STUDY DESIGN:**

Descriptive laboratory study.

**METHODS:**

Fourteen collegiate and professional goaltenders performed skating, butterfly save, and recovery movements on the ice. Hip mechanics were compared across the 3 movements.

**RESULTS:**

The butterfly did not exhibit the greatest range of hip motion in any of the 3 planes. Internal rotation was the only hip motion that appeared close to terminal in this study. When subjects decelerated during skating-shaving the blade of their skate across the surface of the ice-the magnitude of peak hip internal rotation was 54% greater than in the butterfly and 265% greater than in the recovery. No movement involved levels of concomitant flexion, adduction, and internal rotation that resembled the traditional impingement (FADIR) test.

**CONCLUSION:**

The magnitude of internal rotation was the most extreme planar hip motion (relative to end-range) recorded in this study (namely during decelerating) and appeared to differentiate this cohort from other athletic populations. Consequently, repetitive end-range hip internal rotation may be the primary precursor to symptomatic FAI in hockey goaltenders and provides the most plausible account for the high incidence of FAI in these athletes. Resection techniques should, therefore, focus on enhancing internal rotation in goaltenders, compared with flexion and adduction. While the butterfly posture can require significant levels of hip motion, recovering from a save and, in particular, decelerating during skating are also demanding on goaltenders' hip joints. Therefore, it appears critical to consider and accommodate a variety of sport-specific hip postures to comprehensively diagnose, treat, and rehabilitate FAI.

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**KEYWORDS:**

biomechanics; diagnosis; rehabilitation; surgery; treatment

## KNEE

## KNEE/ACL

## MENISCUS

## PATELLA

### Cartilage

[Med Sci Sports Exerc.](#) 2015 Apr 18. [Epub ahead of print]

### The Role of Cartilage Stress in Patellofemoral Pain.

[Besier TF](#)<sup>1</sup>, [Pal S](#), [Draper GE](#), [Fredericson M](#), [Gold GE](#), [Delp SL](#), [Beaupré GS](#).

## [Author information](#)

### Abstract

#### **PURPOSE:**

Elevated cartilage stress has been identified as a potential mechanism for retropatellar pain; however, there are limited data in the literature to support this mechanism. Females are more likely to develop patellofemoral pain than males, yet the causes of this dimorphism are unclear. We used experimental data and computational modeling to determine whether patients with patellofemoral pain had elevated cartilage stress compared to pain-free controls and test the hypothesis that females exhibit greater cartilage stress than males.

#### **METHODS:**

We created finite element models of 24 patients with patellofemoral pain (11 males; 13 females) and 16 pain-free controls (8 males; 8 females) to estimate peak patellar cartilage stress (strain energy density) during a stair climb activity. Simulations took into account cartilage morphology from MRI, joint posture from weight-bearing MRI, and muscle forces from an EMG-driven model.

#### **RESULTS:**

We found no difference in peak patellar strain energy density between patellofemoral pain ( $1.9 \pm 1.23$  J/m) and control subjects ( $1.66 \pm 0.75$  J/m,  $p=0.52$ ). Females exhibited greater cartilage stress compared to males (2.2 vs 1.3 J/m, respectively,  $p=0.0075$ ), with large quadriceps muscle forces (3.7BW females vs 3.3BW males) and 23% smaller joint contact area (females:  $467 \pm 59$  mm vs males:  $608 \pm 95$ mm).

#### **CONCLUSION:**

Patellofemoral pain patients did not display significantly greater patellar cartilage stress compared to pain-free controls; however, there was a great deal of subject variation. Females exhibited greater peak cartilage stress compared to males, which might explain the greater prevalence of patellofemoral pain in females compared to males but other mechanical and biological factors are clearly involved in this complex pathway to pain.

PMID:

25899103

## KNEE/TOTAL

## KNEE/EXERCISE

## OSTEOARTHRITIS/KNEE

### Strength vs. power/ extension

[Phys Ther.](#) 2015 Feb 5. [Epub ahead of print]

Knee Extensor Power Relates to Mobility Performance in People With Knee Osteoarthritis: Cross-Sectional Analysis.

[Accettura AJ](#)<sup>1</sup>, [Brenneman EC](#)<sup>2</sup>, [Stratford PW](#)<sup>3</sup>, [Maly MR](#)<sup>4</sup>.



[Author information](#)**Abstract****BACKGROUND:**

Quadriceps femoris muscle strengthening is a common rehabilitation exercise for knee osteoarthritis (OA). More information is needed to determine whether targeting muscle power is a useful adjunct to strengthening for people with knee OA.

**OBJECTIVE:**

The purpose of this study was to identify the predictive ability of knee extensor strength and knee extensor power in the performance of physical tasks in adults with knee OA.

**DESIGN:**

This study used a cross-sectional design.

**METHODS:**

Fifty-five participants with clinical knee OA were included (43 women; mean [SD] age=60.9 [6.9] years). Dependent variables were: timed stair ascent, timed stair descent, and the Six-Minute Walk Test (6MWT). Independent variables were: peak knee extensor strength and mean peak knee extensor power. Covariates were: age, body mass index, and self-efficacy. Multiple regression analyses were run for each dependent variable with just covariates, then a second model including strength, and then a third model including power. The R<sup>2</sup> values were compared between models.

**RESULTS:**

Power explained greater variance than strength in all models. Over and above the covariates, power explained an additional 6% of the variance in the 6MWT, increasing the R<sup>2</sup> value from .33 to .39; 8% in the stair ascent test, increasing the R<sup>2</sup> value from .52 to .60; and 3% in the stair descent test, increasing the R<sup>2</sup> value from .44 to .47.

**LIMITATIONS:**

The sample demonstrated very good mobility and muscle function scores and may not be indicative of those with severe knee OA.

**CONCLUSIONS:**

In adults with knee OA, knee extensor power was a stronger determinant of walking and stair performance when compared with knee extensor strength. Clinicians should consider these results when advising patients on exercise to maintain or improve mobility.

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PMID:

25655881

**Hyaluronan and cartilage health**

[Ann Rheum Dis](#). 2015 May 6. pii: annrheumdis-2014-206847. doi: 10.1136/annrheumdis-2014-206847. [Epub ahead of print]

Synovial fluid hyaluronan mediates MSC attachment to cartilage, a potential novel mechanism contributing to cartilage repair in osteoarthritis using knee joint distraction.

[Baboolal TG](#)<sup>1</sup>, [Mastbergen SC](#)<sup>2</sup>, [Jones E](#)<sup>3</sup>, [Calder SJ](#)<sup>4</sup>, [Lafeber FP](#)<sup>2</sup>, [McGonagle D](#)<sup>3</sup>.

## Author information

### Abstract

#### **OBJECTIVES:**

Knee joint distraction (KJD) is a novel, but poorly understood, treatment for osteoarthritis (OA) associated with remarkable 'spontaneous' cartilage repair in which resident synovial fluid (SF) multipotential mesenchymal stromal cells (MSCs) may play a role. We hypothesised that SF hyaluronic acid (HA) inhibited the initial interaction between MSCs and cartilage, a key first step to integration, and postulate that KJD environment favoured MSC/cartilage interactions.

#### **METHODS:**

Attachment of dual-labelled SF-MSCs were assessed in a novel in vitro human cartilage model using OA and rheumatoid arthritic (RA) SF. SF was digested with hyaluronidase (hyase) and its effect on adhesion was observed using confocal microscopy. MRI and microscopy were used to image autologous dual-labelled MSCs in an in vivo canine model of KJD. SF-HA was investigated using gel electrophoresis and densitometry.

#### **RESULTS:**

Osteoarthritic-synovial fluid (OA-SF) and purified high molecular weight (MW) HA inhibited SF-MSC adhesion to plastic, while hyase treatment of OA-SF but not RA-SF significantly increased MSC adhesion to cartilage (3.7-fold,  $p < 0.05$ ) These differences were linked to the SF mediated HA-coat which was larger in OA-SF than in RA-SF. OA-SF contained  $>9$  MDa HA and this correlated with increases in adhesion ( $r = 0.880$ ). In the canine KJD model, MSC adhesion to cartilage was evident and also dependent on HA MW.

#### **CONCLUSIONS:**

These findings highlight an unappreciated role of SF-HA on MSC interactions and provide proof of concept that endogenous SF-MSCs are capable of adhering to cartilage in a favourable biochemical and biomechanical environment in OA distracted joints, offering novel one-stage strategies towards joint repair.

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#### **KEYWORDS:**

Knee Osteoarthritis; Orthopedic Surgery; Osteoarthritis; Synovial fluid

PMID:

25948596

## FOOT AND ANKLE

## ORTHOTICS

## ANKLE/INSTABILITY

## ACHILLES TENDON

### Post surgical stiffness

Scand J Med Sci Sports. 2015 Apr 23. doi: 10.1111/sms.12456. [Epub ahead of print]

## Increased unilateral tendon stiffness and its effect on gait 2-6 years after Achilles tendon rupture.

[Agres AN<sup>1</sup>](#), [Duda GN](#), [Gehlen TJ](#), [Arampatzis A](#), [Taylor WR](#), [Manegold S](#).

[Author information](#)

### Abstract

Achilles tendon rupture (ATR) alters tissue composition, which may affect long-term tendon mechanics and ankle function during movement.

However, a relationship between Achilles tendon (AT) properties and ankle joint function during gait remains unclear. The primary hypotheses were that (a) post-ATR tendon stiffness and length differ from the noninjured contralateral side and that (b) intra-patient asymmetries in AT properties correlate to ankle function asymmetries during gait, determined by ankle angles and moments. Ultrasonography and dynamometry were used to assess AT tendon stiffness, strain, elongation, and rest length in both limbs of 20 ATR patients 2-6 years after repair. Three-dimensional ankle angles and moments were determined using gait analysis. Injured tendons exhibited increased stiffness, rest length, and altered kinematics, with higher dorsiflexion and eversion, and lower plantarflexion and inversion. Intra-patient tendon stiffness and tendon length ratios were negatively correlated to intra-patient ratios of the maximum plantarflexion moment and maximum dorsiflexion angle, respectively.

These results suggest that after surgical ATR repair, higher AT stiffness, but not a longer AT, may contribute to deficits in plantarflexion moment generation. These data further support the claim that post-ATR tendon regeneration results in the production of a tissue that is functionally different than noninjured tendon.

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### KEYWORDS:

Tendon regeneration; gait analysis; muscle-tendon unit; tendon adaptation; tendon healing

PMID:

25902929

## Eccentric exercise

[Scand J Med Sci Sports](#). 2015 Apr 27. doi: 10.1111/sms.12466. [Epub ahead of print]

**Changes in Achilles tendon mechanical properties following eccentric heel drop exercise are specific to the free tendon.**

[Obst SJ<sup>1</sup>](#), [Newsham-West R](#), [Barrett RS](#).

[Author information](#)

### Abstract

Mechanical loading of the Achilles tendon during isolated eccentric contractions could induce immediate and region-dependent changes in mechanical properties. Three-dimensional ultrasound was used to examine the immediate effect of isolated eccentric exercise on the mechanical properties of the distal (free tendon) and proximal (gastrocnemii) regions of the Achilles tendon. Participants (n = 14) underwent two testing sessions in which tendon measurements were made at rest and during a 30% and 70% isometric plantar flexion contractions immediately before and after either: (a) 3 × 15 eccentric heel drops or (b) 10-min rest. There was a significant time-by-session interaction for free tendon length and strain for all loading conditions (P < 0.05). Pairwise

## ABSTRACTS

comparisons revealed a significant increase in free tendon length and strain at all contraction intensities after eccentric exercise ( $P < 0.05$ ). There was no significant time-by-session interaction for the gastrocnemii (medial or lateral) aponeurosis or tendon for any of the measured parameters. Immediate changes in Achilles tendon mechanical properties were specific to the free tendon and consistent with changes due to mechanical creep. These findings suggest that the mechanical properties of the free tendon may be more vulnerable to change with exercise compared with the gastrocnemii aponeurosis or tendon.

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**KEYWORDS:**

3D ultrasound; aponeurosis; creep; fatigue; free tendon Scand J Med Sci Sports. 2015 Apr 27.

## PLANTAR SURFACE

### HALLUX VALGUS

#### Obesity and effects of surgery

[Foot Ankle Int.](#) 2015 Apr 16. pii: 1071100715581449. [Epub ahead of print]

#### Effect of Obesity on Outcome of Hallux Valgus Surgery.

[Chen JY](#)<sup>1</sup>, [Lee MJ](#)<sup>2</sup>, [Rikhranj K](#)<sup>2</sup>, [Parmar S](#)<sup>2</sup>, [Chong HC](#)<sup>3</sup>, [Yew AK](#)<sup>2</sup>, [Koo KO](#)<sup>2</sup>, [Singh Rikhranj I](#)<sup>2</sup>.

#### [Author information](#)

#### Abstract

##### **BACKGROUND:**

Obesity is a global epidemic, but its effect on foot and ankle surgeries is not well defined. This study aimed to investigate the influence of obesity on functional outcome scores, incidence of postoperative surgical site infection (SSI), and repeat surgery after hallux valgus (HV) corrective surgery.

##### **METHODS:**

Between January 2007 and December 2011, 452 patients who underwent HV corrective surgery at a tertiary hospital were evaluated. They were categorized into 2 groups based on their body mass index (BMI): (1) BMI less than 30 kg/m<sup>2</sup> (control); (2) BMI 30 kg/m<sup>2</sup> or more (obese). The patients were prospectively followed for 2 years.

##### **RESULTS:**

Patients in the obese group were significantly older by 4 years (95% CI, 1-7 years) (P = .043). The preoperative American Orthopaedic Foot & Ankle Society Hallux Metatarsophalangeal-Interphalangeal (AOFAS Hallux MTP-IP) Scale and Physical Component Score were 6 points (95% CI, 1-11 points) and 3 points (95% CI, 1-6 points) poorer, respectively, in the obese group (P = .014 and P = .032, respectively). However, the Visual Analog Scale, AOFAS Hallux MTP-IP Scale, Physical Component Score, and Mental Component Score were comparable between the 2 groups at 6 months and 2 years of follow-up (all P > .05). Eleven patients (3%) in the control group and 1 patient in the obese group (2%) developed postoperative SSI (P = .777). Nine patients (2%) in the control group and 7 patients in the obese group (14%) required repeat surgery for complications (P < .001).

##### **CONCLUSION:**

The authors conclude that while it is important to warn obese patients of the significantly higher risk of repeat surgery, these patients should not be excluded from undergoing HV surgery.

##### **LEVEL OF EVIDENCE:**

Level III, retrospective comparative series.

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##### **KEYWORDS:**

body mass index; functional outcome; hallux valgus; obesity; repeat surgery

PMID:

25881625

## RHUMATOID ARTHRITIS

### MANUAL THERAPY

#### Patella pain MT

# Exercise, education, manual-therapy and taping compared to education for patellofemoral osteoarthritis: A blinded, randomised clinical trial

Osteoarthritis and Cartilage , 05/11/2015 Crossley KM, et al.

## Summary

### Objective

Patellofemoral joint osteoarthritis (PFJ OA) contributes considerably to knee OA symptoms. This study aimed to determine the efficacy of a PFJ-targeted exercise, education manual-therapy and taping program compared to OA education alone, in participants with PFJ OA.

### Methods

A randomised, participant-blinded and assessor-blinded clinical trial was conducted in primary-care physiotherapy. 92 people aged  $\geq 40$  years with symptomatic and radiographic PFJ OA participated. Physiotherapists delivered the PFJ-targeted exercise, education, manual-therapy and taping program, or the OA-education (control condition) in 8 sessions over 12 weeks.

Primary outcomes at 3-month (primary) and 9-month follow-up: (i) patient-perceived global rating of change (ii) pain visual analogue scale (100mm); and (iii) activities of daily living (ADL) subscale of the Knee injury and Osteoarthritis Outcome Score.

### Results

81 people (88%) completed the 3-month follow-up and data analysed on an intention-to-treat basis. Between-group baseline similarity for participant characteristics was observed. The exercise, education, manual-therapy and taping program resulted in more people reporting much improvement (20/44) than the OA-education group (5/48) (number needed to treat 3 (95% confidence interval (CI) 2 to 5)) and greater pain reduction (mean difference: -15.2mm, 95%CI -27.0 to -3.4). No significant effects on ADL were observed (5.8; 95%CI -0.6 to 12.1). At 9 months there were no significant effects for self-report of improvement, pain (-10.5mm, 95%CI -22.7 to 1.8) or ADL (3.0, 95%CI -3.7 to 9.7).

## Conclusion

Exercise, education, manual-therapy and taping can be recommended to improve short-term patient rating of change and pain severity. However over 9-months, both options were equivalent.

## NEUROMOBILIZATION

## STRETCHING/MUSCLES

## STM

### Cervical fascia

[Eur Spine J.](#) 2015 Apr 23. [Epub ahead of print]

### Cervical canal stenosis and adjacent segment degeneration after anterior cervical arthrodesis.

[Zhang JT](#)<sup>1</sup>, [Cao JM](#), [Meng FT](#), [Shen Y](#).

[Author information](#)

#### Abstract

#### **PURPOSE:**

Adjacent segment degeneration (ASD) is known to occur after anterior cervical arthrodesis. However, it is not known whether cervical canal stenosis enhances the risk of ASD. The purpose of this study was to explore whether congenital stenosis could be used as a predictor of ASD after anterior cervical decompression and fusion (ACDF).

#### **METHODS:**

We enrolled 141 patients who had undergone ACDF for cervical myelopathy and/or radiculopathy, and had at least 6 years of follow-up. In standard radiographs of cervical spine in lateral view, bony congenital stenosis was evaluated and all patients were divided into two groups: stenosis (n = 63) and non-stenosis (n = 78). Radiographic ASD was assessed according to the criteria of Kellgren and Lawrence and correlated with symptomatic ASD. Clinical and radiological parameters were compared between the groups. The primary outcome was the rate of radiographic ASD after initial ACDF. The incidence of symptomatic ASD was assessed by Kaplan-Meier method.

#### **RESULTS:**

Radiographic ASD and symptomatic ASD developed in 46.8 % and 18.4 % of all patients, respectively. There was a significant association between congenital stenosis and radiographic ASD. The area under the receiver operating characteristic curve of preoperative anteroposterior (AP) diameter of cervical canal for predicting radiographic ASD was 0.756. 13.0 mm was the cutoff value of preoperative AP diameter of cervical canal predicting radiographic ASD. Kaplan-Meier analysis predicted a disease-free survival rate of symptomatic ASD in 97.2 % of patients at 5 years and 78.0 % at 10 years after ACDF. There was no significant difference in survival rates of the adjacent segment between the two groups via log-rank analysis (P = 0.102).

#### **CONCLUSION:**

Congenital stenosis can increase the rate of radiographic ASD after initial ACDF. The cutoff value of 13.0 mm for preoperative AP diameter of cervical canal had the highest validity for predicting radiographic ASD.

PMID:

25904424

**STM assisted mob vs foam roll**

## Acute effects of instrument assisted soft tissue mobilization vs. foam rolling on knee and hip range of motion in soccer players

Journal of Bodywork & Movement Therapies , 05/12/2015 Markovic G, et al.

### Summary

The aim of the present investigation was to evaluate the acute effects of foam rolling (FR) and a new form of instrument-assisted soft tissue mobilization (IASTM), Fascial Abrasion Technique™ (FAT) on hip and knee range of motion in soccer players. Twenty male soccer players randomly allocated into FR and FAT group (n=10 each). Passive knee flexion and straight leg raise tests were measured before, immediately after and 24 hours after intervention (FR or FAT). The FR group applied a 2-min quadriceps and hamstrings rolling, while FAT group received a 2-min application of FAT to the quadriceps and hamstrings muscles. Both groups significantly improved knee and hip ROM ( $p < 0.05$ ), with higher gains observed in FAT group (10-19% vs. 5-9%). At 24 hours post-treatment, only FAT group preserved most of the gains in ROM (7-13%;  $p < 0.05$ ). These results support the use of the newly developed IASMT, Fascial Abrasion Technique™ and FR for increasing lower extremity ROM of athletes.



## MUSCLES

## STRETCHING

## MOTOR CONTROL

## CFS/BET

## EXERCISE

## CORE

## POSTURE

## SCOLIOSIS

## ATHLETICS

### Wrist injuries

[Br J Sports Med.](#) 2015 Apr 14. pii: bjsports-2014-094492. doi: 10.1136/bjsports-2014-094492. [Epub ahead of print]

Prevalence, incidence and risk factors for overuse injuries of the wrist in young athletes: a systematic review.

[Kox LS<sup>1</sup>](#), [Kuijer PP<sup>2</sup>](#), [Kerkhoffs GM<sup>3</sup>](#), [Maas M<sup>1</sup>](#), [Frings-Dresen MH<sup>4</sup>](#).

[Author information](#)

#### Abstract

#### **BACKGROUND:**

Overuse wrist injuries can cause long-term symptoms in young athletes performing wrist-loading sports. Information on the prevalence, incidence and associated risk factors is required.

#### **PURPOSE:**

We aimed to review the prevalence and incidence of overuse wrist injuries in young athletes and to identify associated risk factors. We focused on popular wrist-loading youth sports-gymnastics, tennis, field hockey, volleyball, judo and rowing.

#### **STUDY DESIGN:**

Systematic review.

#### **METHODS:**

We conducted a literature search on athletes aged <18 years performing wrist-loading focus sports. Prevalence, incidence and/or risk factor ORs for overuse wrist injuries were extracted directly or calculated from reported data.

#### **RESULTS:**

The search identified six studies on prevalence, five on incidence, and one on risk factors. Prevalence rates were 32-73% for wrist pain and 10-28% for overuse wrist injury. Incidence rates were 7-9% for wrist pain and 0.02-26% for overuse wrist injury. The three criteria associated with

wrist pain were (with OR): age of 10-14 years (11.5), training intensity (1.2), and earlier onset of gymnastics training (1.97).

**CONCLUSIONS:**

Prevalence and incidence of overuse wrist injuries was high in multiple studies of gymnasts, and largely unknown in other wrist-loading focus sports. Three key risk factors for wrist pain in gymnasts were age between 10 and 14 years, earlier training commencement, and training intensity. Using 'wrist pain' in defining overuse, and further investigating risk factors can aid in identifying overuse wrist injuries in young athletes.

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**KEYWORDS:**

Child; Epidemiology; Overuse; Sports; Wrist

PMID:

25872521

**Strength training and performance/bike riders**

[Scand J Med Sci Sports](#). 2015 Apr 18. doi: 10.1111/sms.12468. [Epub ahead of print]

**Strength training improves cycling performance, fractional utilization of VO<sub>2</sub> max and cycling economy in female cyclists.**

[Vikmoen O<sup>1</sup>](#), [Ellefsen S](#), [Trøen Ø](#), [Hollan I](#), [Hanestadhaugen M](#), [Raastad T](#), [Rønnestad BR](#).

[Author information](#)

**Abstract**

The purpose of this study was to investigate the effect of adding heavy strength training to well-trained female cyclists' normal endurance training on cycling performance. Nineteen female cyclists were randomly assigned to 11 weeks of either normal endurance training combined with heavy strength training (E+S, n = 11) or to normal endurance training only (E, n = 8). E+S increased one repetition maximum in one-legged leg press and quadriceps muscle cross-sectional area (CSA) more than E (P < 0.05), and improved mean power output in a 40-min all-out trial, fractional utilization of VO<sub>2 max</sub> and cycling economy (P < 0.05). The proportion of type IIAX-IIIX muscle fibers in m. vastus lateralis was reduced in E+S with a concomitant increase in type IIA fibers (P < 0.05). No changes occurred in E. The individual changes in performance during the 40-min all-out trial was correlated with both change in IIAX-IIIX fiber proportion (r = -0.63) and change in muscle CSA (r = 0.73). In conclusion, adding heavy strength training improved cycling performance, increased fractional utilization of VO<sub>2 max</sub>, and improved cycling economy. The main mechanisms behind these improvements seemed to be increased quadriceps muscle CSA and fiber type shifts from type IIAX-IIIX toward type IIA.

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**KEYWORDS:**

Concurrent training; aerobic power; cycling performance; muscle fiber type composition; work economy

PMID:

25892654

## GAIT

## RUNNING

## Frequency of injury

[Sports Med.](#) 2015 May 8. [Epub ahead of print]

## Incidence of Running-Related Injuries Per 1000 h of running in Different Types of Runners: A Systematic Review and Meta-Analysis.

[Videbæk S](#)<sup>1</sup>, [Bueno AM](#), [Nielsen RO](#), [Rasmussen S](#).

[Author information](#)

### Abstract

**BACKGROUND:**

No systematic review has identified the incidence of running-related injuries per 1000 h of running in different types of runners.

**OBJECTIVE:**

The purpose of the present review was to systematically search the literature for the incidence of running-related injuries per 1000 h of running in different types of runners, and to include the data in meta-analyses.

**DATA SOURCES:**

A search of the PubMed, Scopus, SPORTDiscus, PEDro and Web of Science databases was conducted.

**STUDY SELECTION:**

Titles, abstracts, and full-text articles were screened by two blinded reviewers to identify prospective cohort studies and randomized controlled trials reporting the incidence of running-related injuries in novice runners, recreational runners, ultra-marathon runners, and track and field athletes.

**STUDY APPRAISAL AND SYNTHESIS METHODS:**

Data were extracted from all studies and comprised for further analysis. An adapted scale was applied to assess the risk of bias.

**RESULTS:**

After screening 815 abstracts, 13 original articles were included in the main analysis. Running-related injuries per 1000 h of running ranged from a minimum of 2.5 in a study of long-distance track and field athletes to a maximum of 33.0 in a study of novice runners. The meta-analyses revealed a weighted injury incidence of 17.8 (95 % confidence interval [CI] 16.7-19.1) in novice runners and 7.7 (95 % CI 6.9-8.7) in recreational runners.

**LIMITATIONS:**

Heterogeneity in definitions of injury, definition of type of runner, and outcome measures in the included full-text articles challenged comparison across studies.

**CONCLUSION:**

Novice runners seem to face a significantly greater risk of injury per 1000 h of running than recreational runners.

PMID:

25951917

## Injury and speed training

*J Physiother.* 2013 Dec;59(4):263-9. doi: 10.1016/S1836-9553(13)70203-0.

**Previous injuries and some training characteristics predict running-related injuries in recreational runners: a prospective cohort study.**

Hespanhol Junior LC1, Pena Costa LO, Lopes AD.

**Author information**

### Abstract

#### **QUESTIONS:**

What is the incidence of running-related injuries (RRIs) in recreational runners? Which personal and training characteristics predict RRIs in recreational runners?

#### **DESIGN:**

Prospective cohort study.

#### **PARTICIPANTS:**

A total of 200 recreational runners answered a fortnightly online survey containing questions about their running routine, races, and presence of RRI. These runners were followed-up for a period of 12 weeks.

#### **OUTCOME MEASURES:**

The primary outcome of this study was running-related injury. The incidence of injuries was calculated taking into account the exposure to running and was expressed by RRI/1000 hours. The association between potential predictive factors and RRIs was estimated using generalised estimating equation models.

#### **RESULTS:**

A total of 84 RRIs were registered in 60 (31%) of the 191 recreational runners who completed all follow-up surveys. Of the injured runners 30% (n=18/60) developed two or more RRIs, with 5/18 (28%) being recurrences. The incidence of RRI was 10 RRI/1000 hours of running exposure. The main type of RRI observed was muscle injuries (30%, n=25/84). The knee was the most commonly affected anatomical region (19%, n=16/84). The variables associated with RRI were: previous RRI (OR 1.88, 95% CI 1.01 to 3.51), duration of training although the effect was very small (OR 1.01, 95% CI 1.00 to 1.02), speed training (OR 1.46, 95% CI 1.02 to 2.10), and interval training (OR 0.61, 95% CI 0.43 to 0.88).

#### **CONCLUSIONS:**

Physiotherapists should be aware and advise runners that past RRI and speed training are associated with increased risk of further RRI, while interval training is associated with lower risk, although these associations may not be causative.

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#### **KEYWORDS:**

Athletic injuries; Epidemiology; Etiology; Follow-up studies; Incidence; Risk factors; Running, Sports

## PAIN

### Muscular strength and mortality

*Eur J Intern Med.* 2015 Apr 25. pii: S0953-6205(15)00108-9. doi: 10.1016/j.ejim.2015.04.013. [Epub ahead of print]

## Muscular strength as a strong predictor of mortality: A narrative review.

[Volaklis KA](#)<sup>1</sup>, [Halle M](#)<sup>2</sup>, [Meisinger C](#)<sup>3</sup>.

[Author information](#)

### Abstract

Muscular strength, an important component of physical fitness, has an independent role in the prevention of chronic diseases whereas muscular weakness is strongly related to functional limitations and physical disability. Our purpose was to investigate the role of muscular strength as a predictor of mortality in health and disease. We conducted a systematic search in EMBASE and MEDLINE (1980-2014) looking for the association between muscular strength and mortality risk (all-cause and cause-specific mortality). Selected publications included 23 papers (15 epidemiological and 8 clinical studies). Muscular strength was inversely and independently associated with all-cause mortality even after adjusting for several confounders including the levels of physical activity or even cardiorespiratory fitness. The same pattern was observed for cardiovascular mortality; however more research is needed due to the few available data. The existed studies failed to show that low muscular strength is predictive of cancer mortality. Furthermore, a strong and inverse association of muscular strength with all-cause mortality has also been confirmed in several clinical populations such as cardiovascular disease, peripheral artery disease, cancer, renal failure, chronic obstructive pulmonary disease, rheumatoid arthritis and patients with critical illness. However, future studies are needed to further establish the current evidence and to explore the exact independent mechanisms of muscular strength in relation to mortality. Muscular strength as a modifiable risk factor would be of great interest from a public health perspective.

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### KEYWORDS:

Disease; Epidemiology; Health; Mortality; Muscular strength; Risk factor

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25921473

## COMPLEX REGIONAL PAIN

## FIBROMYALGIA

## NUTRITION/VITAMINS

[Vit. D and muscle strength](#)

[Osteoporos Int.](#) 2015 May 9. [Epub ahead of print]

Effect of vitamin D supplementation alone on muscle function in postmenopausal women: a randomized, double-blind, placebo-controlled clinical trial.

[Cangussu LM](#)<sup>1</sup>, [Nahas-Neto J](#), [Orsatti CL](#), [Bueloni-Dias FN](#), [Nahas EA](#).

[Author information](#)**Abstract**

The present study investigates the effects of vitamin D on muscle function in postmenopausal women. It has been shown that vitamin D supplementation in postmenopausal women with hypovitaminosis D provides significant protective factor against sarcopenia, with significant increases in muscle strength and control of progressive loss of lean mass.

**INTRODUCTION:**

We aimed to evaluate the effect of supplementation of vitamin D (VITD) alone on muscle function in younger postmenopausal women.

**METHODS:**

In this double-blind, placebo-controlled clinical trial, 160 Brazilian postmenopausal women were randomized into two groups: VITD group consisting of patients receiving vitamin D3 1000 IU/day orally (n = 80) or placebo group (n = 80). Women with amenorrhea for more than 12 months and age 50-65 years, with a history of falls (previous 12 months), were included. The intervention time was 9 months, with assessments at two points, start and end. Lean mass was estimated by total-body dual-energy X-ray absorptiometry (DXA) and muscle strength by handgrip strength and chair rising test. The plasma concentrations of 25-hydroxyvitamin D [25(OH)D] were measured by high-performance liquid chromatography (HPLC). Statistical analysis was by intention to treat (ITT), using ANOVA, Student's t test, and Tukey's test.

**RESULTS:**

After 9 months, average values of 25(OH)D increased from  $15.0 \pm 7.5$  to  $27.5 \pm 10.4$  ng/ml (+45.4 %) in the VITD group and decreased from  $16.9 \pm 6.7$  to  $13.8 \pm 6.0$  ng/ml (-18.5 %) in the placebo group ( $p < 0.001$ ). In the VITD group, there was significant increase in muscle strength (+25.3 %) of the lower limbs by chair rising test ( $p = 0.036$ ). In women in the placebo group, there was considerable loss (-6.8 %) in the lean mass ( $p = 0.030$ ).

**CONCLUSION:**

The supplementation of vitamin D alone in postmenopausal women provided significant protective factor against the occurrence of sarcopenia, with significant increases in muscle strength and control of progressive loss of lean mass.

PMID:

25956283

**Omega 3/MS pain**

[J Clin Oncol](#). 2015 May 4. pii: JCO.2014.59.5595. [Epub ahead of print]

## Randomized Multicenter Placebo-Controlled Trial of Omega-3 Fatty Acids for the Control of Aromatase Inhibitor-Induced Musculoskeletal Pain: SWOG S0927.

[Hershman DL](#)<sup>1</sup>, [Unger JM](#)<sup>2</sup>, [Crew KD](#)<sup>2</sup>, [Awad D](#)<sup>2</sup>, [Dakhil SR](#)<sup>2</sup>, [Gralow J](#)<sup>2</sup>, [Greenlee H](#)<sup>2</sup>, [Lew DL](#)<sup>2</sup>, [Minasian LM](#)<sup>2</sup>, [Till C](#)<sup>2</sup>, [Wade JL 3rd](#)<sup>2</sup>, [Meyskens FL](#)<sup>2</sup>, [Moinpour CM](#)<sup>2</sup>.

[Author information](#)**Abstract****PURPOSE:**

Musculoskeletal symptoms are the most common adverse effects of aromatase inhibitors (AIs) and can result in decreased quality of life and discontinuation of therapy. Omega-3 fatty acids

(O3-FAs) can be effective in decreasing arthralgia resulting from rheumatologic conditions and reducing serum triglycerides.

**PATIENTS AND METHODS:**

Women with early-stage breast cancer receiving an AI who had a worst joint pain/stiffness score  $\geq 5$  of 10 using the Brief Pain Inventory-Short Form (BPI-SF) were randomly assigned to receive either O3-FAs 3.3 g or placebo (soybean/corn oil) daily for 24 weeks. Clinically significant change was defined as  $\geq 2$ -point drop from baseline. Patients also completed quality-of-life (Functional Assessment of Cancer Therapy-Endocrine Symptoms) and additional pain/stiffness assessments at baseline and weeks 6, 12, and 24. Serial fasting blood was collected for lipid analysis.

**RESULTS:**

Among 262 patients registered, 249 were evaluable, with 122 women in the O3-FA arm and 127 in the placebo arm. Compared with baseline, the mean observed BPI-SF score decreased by 1.74 points at 12 weeks and 2.22 points at 24 weeks with O3-FAs and by 1.49 and 1.81 points, respectively, with placebo. In a linear regression adjusting for the baseline score, osteoarthritis, and taxane use, adjusted 12-week BPI-SF scores did not differ by arm ( $P = .58$ ). Triglyceride levels decreased in patients receiving O3-FA treatment and remained the same for those receiving placebo ( $P = .01$ ). No between-group differences were seen for HDL, LDL, or C-reactive protein.

**CONCLUSION:**

We found a substantial ( $> 50\%$ ) and sustained improvement in AI arthralgia for both O3-FAs and placebo but found no meaningful difference between the groups.

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## PHARMACOLOGY

## ELECTROTHERAPY

## NEUROLOGICAL CONDITIONS